WHAT IS CLAIMED IS:

1. A relevancy ranking method comprising the steps of:

parsing an input query into at least one query predicate structure;

parsing a set of documents to generate at least one document predicate structure;

comparing each of said at least one query predicate structure with each of said at least one document predicate structure;

calculating a matching degree using a multilevel modifier strategy to assign different relevance values to different parts of each of said at least one query predicate structure and said at least one document predicate structure match; and

calculating a similarity coefficient based on pairs of said at least one query predicate structure and each of said at least one document predicate structure to determine relevance of each one of said set of documents to said input query.

2. A relevancy ranking method as recited in claim 1, wherein said step of parsing an input query into at least one predicate structure is performed using an ontological parser.

3. A relevancy ranking method as recited in claim 1, wherein said step of parsing a set of documents to generate

at least one document predicate structure is performed using an ontological parser.

4. A relevancy ranking method as recited in claim 1, wherein said matching degree is a real number.

5. A relevancy ranking method as recited in claim 1, wherein said calculating step comprises the steps of:

dynamically comparing overall predicate structures for each of said at least one document to said predicate structures for said at least one user query and returning a ranking based on a predicate vector similarity measure;

comparing each of said at least one query predicate structure and said at least one document predicate structure and returning a predicate structure similarity measure;

comparing similarity between predicate parts of said at least one query predicate structure and said at least one document predicate structure and returning a predicate matching similarity measure;

comparing argument parts of said at least one query predicate structure and said at least one document predicate structure and returning an argument similarity measure;

comparing concepts of said at least one query predicate structure and said at least one document predicate structure and returning a concept similarity measure; and

comparing proper nouns of said at least one query predicate structure and said at least one document predicate structure and returning a proper noun similarity measure.

6. A relevancy ranking method as recited in claim 1, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon an abstraction level of said at least one query predicate structure and said at least one document predicate structure, wherein said match is assigned a small weight when said match is relatively abstract.

7. A relevancy ranking method as recited in claim 6, wherein said abstraction level of said at least one query predicate structure and said at least one document predicate structure comprises predicate only matches, argument only matches, and predicate and argument matches, wherein said predicate only matches are more abstract than said argument only matches, and said argument only matches are more abstract than said predicate and argument matches.

8. A relevancy ranking method as recited in claim 1, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon concept proximity representing an ontological relationship between two concepts.

9. A relevancy ranking method as recited in claim 8, wherein said ontological relationship between two concepts is closer when a difference between said two concepts is smaller, and said matching degree is assigned a higher relevancy bonus.

10. A relevancy ranking method as recited in claim 1, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon the location of a predicate in one of said documents in said set of documents.

11. A relevancy ranking method as recited in claim 10, wherein when said location is disposed in the beginning of said document, said document is assigned a higher relevancy number.

12. A relevancy ranking method as recited in claim 1, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon a degree of proper noun matching.

13. A relevancy ranking method as recited in claim 1, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon a matching degree of words having the same word stem.

14. A relevancy ranking method as recited in claim 1, further comprising the step of identifying each of said document predicate structures by a predicate key that is an integer representation, wherein conceptual nearness of two of said document predicate structures is estimated by subtracting corresponding one of said predicate keys.

15. A relevancy ranking method as recited in claim 14, comprising the further step of constructing multi-dimensional vectors using said integer representations.

16. A relevancy ranking method as recited in claim 15, comprising the further step of normalizing said multi-dimensional vectors.

17. A relevancy ranking method as recited in claim 1, further comprising the step of identifying each of said query predicate structures by a predicate key that is an integer representation, and constructing multi-dimensional vectors, for each of said query predicate structures, using said integer representations.

18. A relevancy ranking method as recited in claim 16, further comprising the step of identifying each of said query predicate structures by a predicate key that is an integer representation, and constructing multi-dimensional vectors, for each of said query predicate structures, using said integer representations.

19. A relevancy ranking method as recited in claim 18, further comprising the steps of performing a dot-product operation between multi-dimensional vectors, for each of said query predicate structures and each of said multi-dimensional vectors for each of said document predicate structures,

ranking each of said documents in said document set from largest dot-product result to smallest dot-product result, and

returning said rankings.

20. A relevancy ranking method as recited in claim 1, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon a size of each of said documents in said set of documents.

21. A clustering method comprising the steps of:

parsing an input query into at least one query predicate structure;

vectorizing said input query;

identifying each of said query predicate structures by a predicate key that is an integer, and constructing multi-dimensional vectors, for each of said query predicate structures, using said integers;

parsing a plurality of documents into at least one document predicate structure for each of said plurality of documents;

vectorizing said set of documents;

identifying said at least one document predicate structure by a predicate key that is an integer, wherein conceptual nearness of two of said document predicate structures is estimated by subtracting corresponding ones of said predicate keys;

comparing said at least one query predicate structure with said plurality of document predicate structures for a said plurality of documents;

clustering similar documents, within said plurality of documents, where said at least one document vector representation matches said at least one query predicate structure.

22. A clustering method as recited in claim 21, wherein said clustering is performed based on patterns of predicate pairs of said matching ones of said set of documents.

23. A clustering method as recited in claim 22, wherein said clustering step further comprises comparing said at least one predicate structure of said input query to a map of said clustered matches.

24. A clustering method as recited in claim 23, wherein said clustering step further comprises identifying clusters most likely to fit said input.

25. A clustering method as recited in claim 23, wherein said clustering step further comprises providing a feedback mechanism so that users can determine if a returned cluster is a good fit.

26. A clustering method as recited in claim 23, wherein said clustering step comprises the steps of:

self-organizing to adapt a collection said set of documents matching an input query; and

identifying and returning at least one appropriate cluster of said collection of documents.

27. A clustering method as recited in claim 21, wherein said clustering is performed using a neural network, said clustering step performs said steps of:

vectorizing said set of documents and vectorizing said input query;

self-organizing said matching ones of said set of documents that match said input query; and

retrieving clusters of said matching ones of said set of documents that match said input query.

28. A clustering method as recited in claim 21, wherein said neural network comprises a plurality of neurodes.

29. A clustering method as recited in claim 28, wherein said step of self-organizing said matching ones of said set of documents that match said input query comprises the steps of:

developing a said map from said neurodes; and

determining clusters of said plurality of neurodes that represent ones of said documents conceptually near one another.

30. A relevancy ranking method as recited in claim 19, comprising the further step of clustering matching ones of said set of documents that match said input query.

31. A relevancy ranking method as recited in claim 30, wherein said clustering is performed based on patterns of predicate pairs of said matching ones of said set of documents.

32. A relevancy ranking method as recited in claim 31, wherein said clustering step further comprises comparing said at least one predicate structure of said input query to a map of said clustered matches.

33. A relevancy ranking method as recited in claim 32, wherein said clustering step further comprises identifying clusters most likely to fit said input.

34. A relevancy ranking method as recited in claim 32, wherein said clustering step further comprises providing a feedback mechanism so that users can determine if a returned cluster is a good fit.

35. A relevancy ranking method as recited in claim 32, wherein said clustering step comprises the steps of:

self-organizing to adapt a collection of said set of documents matching an input query; and

identifying and returning at least one appropriate cluster of said collection of documents.

36. A clustering method as recited in claim 21, further comprising the steps of:

parsing an input query into said at least one predicate structure;

vectorizing said input query;

parsing said plurality of documents to generate at least one document predicate structure for each of said plurality of documents;

vectorizing said plurality of documents;

comparing each of said at least one query predicate structure with each of said at least one document predicate structure;

calculating a matching degree using a multilevel modifier strategy to assign different relevance values to different parts of each of said at least one query predicate structure and said at least one document predicate structure match; and

calculating a similarity coefficient based on pairs of said at least one query predicate structure and each of said at least one document predicate structure to determine

relevance of each one of said set of documents to said input query.

37. A clustering method as recited in claim 36, wherein said step of parsing an input query into at least one predicate structure is performed using an ontological parser.

38. A clustering method as recited in claim 36, wherein said step of parsing a set of documents to generate at least one document predicate structure is performed using an ontological parser.

39. A clustering method as recited in claim 36, wherein said matching degree is a real number.

40. A clustering method as recited in claim 36, wherein said step of calculating a matching degree comprises the steps of:

dynamically comparing overall predicate structures for each of said at least one document to said predicate structures for said at least one user query and returning a ranking based on a predicate vector similarity measure;

comparing each of said at least one query predicate structure and said at least one document predicate structure and returning a predicate structure similarity measure;

comparing similarity between predicate parts of said at least one query predicate structure and said at least one

document predicate structure and returning a predicate matching similarity measure;

comparing argument parts of said at least one query predicate structure and said at least one document predicate structure and returning an argument similarity measure;

comparing concepts of said at least one query predicate structure and said at least one document predicate structure and returning a concept similarity measure; and

comparing proper nouns of said at least one query predicate structure and said at least one document predicate structure and returning a proper noun similarity measure.

41. A clustering method as recited in claim 36, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon an abstraction level of said at least one query predicate structure and said at least one document predicate structure, wherein said match is assigned a small weight when said match is relatively abstract.

42. A clustering method as recited in claim 41, wherein said abstraction level of said at least one query predicate structure and said at least one document predicate structure comprises predicate only matches, argument only matches, and predicate and argument matches, wherein said verb only matches are more abstract than said noun only matches, and said noun only matches are more abstract than said verb and noun matches.

43. A clustering method as recited in claim 36, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon concept proximity representing an ontological relationship between two concepts.

44. A clustering method as recited in claim 43, wherein said ontological relationship between two concepts is closer when a difference between said two concepts is smaller, and said matching degree is assigned a higher relevancy bonus.

45. A clustering method as recited in claim 36, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon the location of a predicate in one of said documents in said set of documents.

46. A clustering method as recited in claim 45, wherein when said location is disposed in the beginning of said document, said document is assigned a higher relevancy number.

47. A clustering method as recited in claim 36, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon a degree of proper noun matching.

48. A clustering method as recited in claim 36, wherein said step of calculating said matching degree using a multilevel modifier strategy determines said relevance values based upon a matching degree of words having the same word stem.

49. A clustering method as recited in claim 21, further comprising the step of identifying each of said document predicate structures by a predicate key that is an integer representation, wherein conceptual nearness of two of said document predicate structures is estimated by subtracting corresponding one of said predicate keys.

50. A clustering method as recited in claim 49, comprising the further step of constructing multi-dimensional vectors using said integer representations.

51. A clustering method as recited in claim 50, comprising the further step of normalizing said multi-dimensional vectors.

52. A clustering method as recited in claim 49, further comprising the step of identifying each of said query predicate structures by a predicate key that is an integer representation, and constructing multi-dimensional vectors, for each of said query predicate structures, using said integer representations.

53. A clustering method as recited in claim 52, further comprising the step of identifying each of said query predicate structures by a predicate key that is an integer representation, and constructing multi-dimensional vectors, for each of said query predicate structures, using said integer representations.

54. A method of vectorizing a set of document predicate structures, comprising the steps of:

identifying each set of predicates and arguments in said set of predicate structures by predicate keys that are integer representations, wherein conceptual nearness of two of said document predicate structures is estimated by subtracting corresponding one of said predicate keys.

55. A method of vectorizing a set of document predicate structures, as recited in claim 54, comprising the further step of constructing multi-dimensional vectors using said integer representations.

56. A method of vectorizing a set of document predicate structures, as recited in claim 55, comprising the further step of normalizing said multi-dimensional vectors.

57. A method of vectorizing a set of query predicate structures, as recited in claim 54, further comprising the step of identifying query predicate structures by predicate keys that are integer representations, and constructing

multi-dimensional vectors, for each of said query predicate structures, using said integer representations.

58. A method of vectorizing a set of query predicate structures, as recited in claim 56, further comprising the step of identifying query predicate structures by predicate keys that are integer representations, and constructing multi-dimensional vectors, for each of said query predicate structures, using said integer representations.

59. A relevancy ranking system comprising:

at least one ontological parser to parse an input query into at least one query predicate structure, and a set of documents each into at least one document predicate structure;

an input query predicate storage unit that stores said at least one input query predicate structure;

a document predicate storage unit that stores said at least one document predicate structure for each of said documents in said set;

a query vectorization unit that converts said at least one query predicate structure into multidimensional numerical query vectors;

a document vectorization unit that converts said at least one document predicate structures into multidimensional numerical document vectors; and

a relevancy ranking unit that compares each of said at least one input query predicate structure with each of said

at least one document predicate structure, calculates a matching degree to assign different relevance values to different parts of each of said at least one query predicate structure and said at least one document predicate structure match, and calculates a similarity coefficient based on pairs of said at least one query predicate structure and each of said at least one document predicate structure to determine relevance of each one of said set of documents to said input query.

60. A relevancy ranking system as recited in claim 59, wherein said matching degree is a real number.

61. A relevancy ranking system comprising:

at least one ontological parser to parse an input query into at least one query predicate structure, and a set of documents each into at least one document predicate structure;

an input query predicate storage unit that stores said at least one input query predicate structure;

a document predicate storage unit that stores said at least one document predicate structure for each of said documents in said set;

a document vectorization unit that converts said at least one document predicate structure into multidimensional numerical vectors;

a query vectorization unit that converts said at least one query predicate structures into multidimensional numerical vectors;

a relevancy ranking unit that compares each of said at least one input query predicate structure with each of said at least one document predicate structure, calculates a matching degree to assign different relevance values to different parts of each of said at least one query predicate structure and said at least one document predicate structure match, and calculates a similarity coefficient based on pairs of said at least one query predicate structure and each of said at least one document predicate structure to determine relevance of each one of said set of documents to said input query; and

a neural network for providing clusters of matching ones of said set of documents that match said input query.

62. A relevancy ranking system as recited in claim 61, further comprising a feedback mechanism so that users can determine if a returned cluster is a good match for said input query.

63. A relevancy ranking system as recited in claim 61, wherein said neural network self-organizes and retrieves clusters of said matching ones of said set of documents that match said input query.

64. A relevancy ranking system as recited in claim 61, wherein said neural network comprises a plurality of neurodes.

65. A relevancy ranking system as recited in claim 59, further comprising a feedback mechanism so that users can determine if a returned cluster is a good match for said input query.

66. A relevancy ranking system as recited in claim 59, wherein said neural network self-organizes and retrieves clusters of said matching ones of said set of documents that match said input query.

67. A clustering system comprising:

at least one ontological parser to parse an input query into at least one query predicate structure, and a set of documents each into at least one document predicate structure;

an input query predicate storage unit that stores said at least one input query predicate structure;

a document predicate storage unit that stores said at least one document predicate structure for each of said documents in said set;

a document vectorization unit that converts said at least one document predicate structure into multidimensional numerical vector representations;

a query vectorization unit that converts said at least one query predicate structure into multidimensional numerical vector representations; and

a neural network for providing clusters of matching ones of said set of documents that match said input query.

68. A question and answering system comprising:

at least one ontological parser to parse an input query into at least one query predicate structure, and a set of documents each into at least one document predicate structure for each of a plurality of documents;

a query vectorization unit that converts said at least one query predicate structure into multidimensional numerical vector representations, wherein each of said query predicate structures are identified by a predicate key that is an integer, and multi-dimensional vectors for each of said query predicate structures are constructed using said integers;

a document vectorization unit that converts said at least one document predicate structure for each of a plurality of documents into multidimensional numerical vector representations, wherein said at least one document predicate structure is identified by a predicate key that is an integer, wherein conceptual nearness of two of said document predicate structures is estimated by subtracting corresponding ones of said predicate keys;

clustering unit that groups similar documents, within said plurality of documents, where said at least one document vector representation matches said at least one query predicate structure; and

a relevancy ranking unit that compares said at least one query predicate structure with said plurality of document predicate structures for each of said plurality of documents.

69. A question and answering system as recited in claim 68, further comprising:

an answer formulation unit that provides a natural language response to said input query.